



Technology and Learning Connections

Increasing student achievement through the systemic alignment of technology, policies, and curriculum in a multi-tiered system of supports.



Big Idea

When we talk about “academic problem solving” we are talking about analyzing students’ learning needs in relation to a standard or set of standards (core instruction) and using that information to increase the effectiveness of all Tiers of instruction.

Academic Problem Solving

- Analysis of high probability barriers
- Analysis of instructional materials
- Exploration of instructional scaffolds
- Closer analysis of the standard
- Analysis of individual student responses
- Increased time with student
- Increased frequency of formative assessments
- Increased frequency of adjustments to instruction
- Review of instructional alignment within the Tiers
- Generalization of supports between the Tiers



Actively processing information and experiences in a way that results in a measurable increase of knowledge directly related to a standard or set of standards.

Goals & Objectives

- Describe a continuum of supports that address barriers to engagement
- Identify barriers to designing effective instruction for all students
- List critical aspects of an infrastructure necessary to support a highly effective core curriculum for all students
- Describe how to match instructional scaffolding to student needs
- Identify technology tools and resources to support effective instructional strategies
- Describe how to align and problem solve within all tiers of instruction.



*A Multi-Tiered
System of Supports*



Standards

Unpacking Steps (this information should come from core)	Example pre-requisite or implied skills
• Select a standard or set of standards • Circle the verbs and action phrases (skills-Do) • Underline the nouns and noun phrases (knowledge and understanding—K and U) • Identify pre-requisite skills implied within the standard • Determine instructional implications of the standard	Reading Planning and Problem Solving Critical Thinking Skills Maintain Focus Task Persistence Organization and Synthesis of Information Self-Regulation Active Listening Instructional Implication • Review/reteach the implied pre-requisite skills • Provide scaffolding for implied pre-requisite skills

Instructional Indicators (Hattie)

Direct Instruction	Gaining Meaning	Relevance
• Clear learning goals/intentions • Clear success criteria • Build engagement • Appropriate lesson presentation • Guided practice • Closure & independent practice	• Summarizing • Questioning • Clarifying • Predicting	• Knowledge integration • Background knowledge • Connectedness to the student's world • Problem-based instruction

Student Characteristics (Hattie)

• Self-efficacy the confidence that we can learn • Self-handicapping choosing obstacles to avoid failure • Self-motivation ratio of intrinsic and extrinsic motivation • Self-goals master, performance, and social goals	• Self-dependence being dependent on adults for directions, goals, help, etc. • Self-discounting believing positive feedback is invalid • Hopelessness feeling like there is no point in trying, that failure is inevitable • Social comparison self-image is based on a comparison with others
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Cognitive Processes

Input

- Recognizing size, shape, and placement of text
- Recognizing line and paragraph typography
- Distinguishing subtle differences in sounds

Integration

- Sequencing (ordering, sequencing, and organizing information)
- Abstraction (inferring meaning and generalizing a text)

Memory

- Short & long term memory
- Long term potentiation
- Long term depression

Output

- Spontaneous language
- Demand language

Engagement

Academic Engagement “I can”

- Grade level reading, writing, math, and science skills
- Digital citizenship
- Global/cultural awareness
- Research/information literacy
- Effective use of real-world tools
- STEM

Social Engagement “I belong”

- Perspective taking
- Appreciating diversity
- Interactive communication
- Cooperation
- Conflict resolution
- Seeking and providing help

Psychological Engagement “I want to”

- Self-confidence
- Self-efficacy
- Impulse control
- Stress management
- Self-discipline
- Organization
- Planning and problem solving
- Progress monitoring

Universal Design for Learning (UDL)

UDL Principles

• Flexibility in Representation

- Options for perception
- Options for language and symbols
- Options for comprehension

• Flexibility in Expression

- Options for physical action
- Options for expressive skills/fluency
- Options for executive functions

• Flexibility in Engagement

- Options for recruiting interest
- Options for sustaining effort
- Options for self-regulation



Recognition Networks—how we recognize information and categorize what we see, hear, and read.



Strategic Networks—how we organize and express our ideas; plan and perform tasks.



Affective Networks—how we are challenged, excited, or interested.



Infrastructure/Making Systemic Connections | Questions to ask.

- Do your grade level or subject level teachers currently plan instruction together?
- Do your grade level or subject level teachers currently problem solve instruction together?
- Do you have an inventory of all the instructional and technology resources available in your school/district?
- Are your teachers aware of all the instructional and technology resources available in your school/district?
- Are your teachers aware of all the features of their technology/resources and can they use them for instruction and intensive intervention?

Example: If a classroom has an interactive whiteboard does the teacher understand and know how to use all of the features of that resource? Can the teacher select the appropriate features to support memory or information organization?

- Does your district's textbook and instructional materials guidelines ensure that flexible digital formats are being purchased to support Universal Design for Learning and the use of instructional scaffolds to support intensive intervention?
- Does your district's IT department have a set of guidelines that support teachers being able to quickly try out different types of software or technologies when problem solving intensive intervention?

Technology Resources



Assistive Technology
Gallery - A collection of
images of technologies
for students.
<http://bit.ly/1TqnYjj>



National Accessible
Educational Materials
Center - Resources on
accessible instruction.
<http://aem.cast.org/>



Assistive Technology
Brochure - Information
on assistive technology
for students.
<http://bit.ly/11ujaU6>



Digital Materials
Accessibility Discussion
Guide
<http://bit.ly/1b4YJM2>

